

WHAT IS CLAIMED IS:

1. A hybrid integrated circuit device which is comprised of:

5 a mounting board having at least an insulated surface with a plurality of conductive patterns being formed thereon;

semiconductor elements electrically connected to said conductive patterns, and

10 fine metal wires for electrically connecting said semiconductor elements with said conductive patterns, wherein

at least one of said semiconductor elements is connected with at least part of said fine metal wires of which other ends of connection are made with conductive paths so as to be electrically connected with at least one of said conductive patterns, further wherein,

15 said at least one of semiconductor devices, said at least part of fine metal wires and said conductive paths are integrally molded as a single package so as to be mounted on said at least one of conductive patterns of said mounting board.

20 2. The hybrid integrated circuit device according to claim 1, wherein said fine metal wires are comprised of a plurality of types of fine metal wires being made of different materials, further wherein one of said plurality of types of metal wires is used for said at least part of fine metal wires.

25 3. The hybrid integrated circuit device according to claim 1 or 2, wherein said fine metal wires are comprised of a plurality of types of fine metal wires being made of different wire diameters, further wherein one of said plurality of types of metal wires is used for said at least part of fine metal wires.

4. A semiconductor device which is comprising of;  
a semiconductor element;  
fine metal wires connected with said semiconductor element, wherein  
said semiconductor device is further comprising of conductive paths  
5 which are spatially discrete with one another, and said semiconductor device,  
said fine metal wires and said conductive paths are integrally molded as a  
single package.

5. A hybrid integrated circuit device which is comprised of:  
10 a mounting board having at least an insulated surface with a plurality of  
conductive patterns;  
a small signal type semiconductor element electrically connected to a set  
of said conductive patterns;  
a large signal type semiconductor element electrically connected to at  
15 least one of said conductive patterns;  
fine metal wires for connecting bonding electrodes of said small signal  
type semiconductor element, wherein  
said fine metal wires are used for connecting bonding electrodes of said  
small signal type semiconductor element to conductive paths so as to be  
20 electrically connected with said set of conductive patterns, further wherein,  
a packaged semiconductor device to be mounted on said mounting board  
is comprised of said small signal type semiconductor element, said fine metal  
wires and said conductive paths.

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6. A hybrid integrated circuit device which is comprised of:  
a mounting board having at least an insulated surface with a plurality of  
conductive patterns;  
a small signal type semiconductor element electrically connected to at

least one of said conductive patterns;

a large signal type semiconductor element electrically connected to a set of said conductive patterns;

fine metal wires, wherein

5        said fine metal wires are used for connecting bonding electrodes of said large signal type semiconductor element to conductive paths so as to be electrically connected with said set of conductive patterns, further wherein,

10       a packaged semiconductor device to be mounted on said mounting board is comprised of said large signal type semiconductor element, said fine metal wires and said conductive paths.

7. The hybrid integrated circuit device according to claim 5 or 6, wherein the fine metal wires are Au wires.

15       8. The hybrid integrated circuit device according to claim 5 or 6, wherein the fine metal wires are Al wires.

9.

A hybrid integrated circuit device which is comprised of:

20       a mounting board having at least an insulated surface and with a plurality of conductive patterns,

a small signal type semiconductor element electrically connected to a set of said conductive patterns,

25       a large signal type semiconductor element electrically connected to at least one of said conductive patterns,

small diameter fine metal wires for connecting bonding electrodes of said small signal type semiconductor element, and

large diameter fine metal wires for connecting bonding electrodes of said large signal type semiconductor element with said at least one of conductive

patterns, wherein

said small diameter fine metal wires are used for connecting bonding electrodes of said small signal type semiconductor element to conductive paths so as to be electrically connected with said set of conductive patterns, further  
5 wherein,

a packaged semiconductor device to be mounted on said mounting board is comprised of said small signal type semiconductor element, said small diameter fine metal wires and said conductive paths.

10 10. A hybrid integrated circuit device which is comprised of:

a mounting board having at least a surface insulated and with a plurality of conductive patterns,

a small signal type semiconductor element electrically connected to said conductive patterns,

15 a large signal type semiconductor element electrically connected to a set of said conductive patterns,

large diameter fine metal wires for connecting bonding electrodes of said large signal type semiconductor element, and

20 small diameter fine metal wires for connecting bonding electrodes of said small signal type semiconductor element with at least one of said conductive patterns, wherein

25 said large diameter fine metal wires are used for connecting bonding electrodes of said large signal type semiconductor element to conductive paths so as to be electrically connected with said set of conductive patterns, further wherein,

a packaged semiconductor device to be mounted on said mounting board is comprised of said large signal type semiconductor element, said large diameter fine metal wires and said conductive paths.

11. A hybrid integrated circuit device at least comprising a mounting board having at least a surface insulated and with a plurality of conductive patterns, a small signal type semiconductor element electrically connected to said conductive pattern, a large signal type semiconductor element electrically  
5 connected to said conductive pattern,

Au-metal wires for bonding connecting electrodes of said small signal type semiconductor element, and

Al-metal wires for bonding connecting electrodes of said large signal type semiconductor element with said at least one of conductive patterns, wherein

10 a semiconductor device is mounted on said mounting board, said semiconductor device having a plurality of conductive paths electrically separated by a trench, a small signal type semiconductor element fixed on said conductive path, an Au wire connecting said small signal type semiconductor element with said conductive path, and an insulating resin for coating said  
15 semiconductor element and the Au wire and being filled in said trench between said conductive paths to serve as the integral support, with a back face of said conductive paths exposed.

12. A hybrid integrated circuit device at least comprising a mounting  
20 board having at least an insulated surface and with a plurality of conductive patterns, a small signal type semiconductor element electrically connected to said conductive pattern, a large signal type semiconductor element electrically connected to said conductive pattern,

Au-metal wires for bonding connecting electrodes of said small signal  
25 type semiconductor element, and

Al-metal wires for bonding connecting electrodes of said large signal type semiconductor element with said at least one of conductive patterns, wherein

a semiconductor device is mounted on said mounting board, said semiconductor device having a plurality of conductive paths electrically

separated by a trench, a large signal type semiconductor element fixed on said conductive path, an Al wire connecting said large signal type semiconductor element with said conductive path, and an insulating resin for coating said large signal type semiconductor element and the Al wire and being filled in said trench between said conductive paths to serve as the integral support, with a back face of said conductive paths exposed.

13. A hybrid integrated circuit device at least comprising a mounting board having at least an insulated surface and with a plurality of conductive patterns, a small signal type semiconductor element electrically connected to said conductive pattern, a large signal type semiconductor element electrically connected to said conductive pattern, a small diameter fine metal wire for bonding at least a bonding electrode of said small signal type semiconductor element with said conductive pattern, and a large diameter fine metal wire for bonding said conductive patterns, wherein:

a semiconductor device is mounted on said mounting board, said semiconductor device having a plurality of conductive paths electrically separated by a trench, a small signal type semiconductor element fixed on said conductive path, a small diameter fine metal wire connecting said small signal type semiconductor element with said conductive path, and an insulating resin for coating said semiconductor element and the small diameter fine wire and being filled in said trench between said conductive paths to serve as the integral support, with a back face of said conductive paths exposed, wherein connecting means other than said small diameter fine metal wire is used in an area except where said semiconductor device is mounted.

14. A hybrid integrated circuit device at least comprising a mounting board having at least an insulated surface and with a plurality of conductive patterns, a small signal type semiconductor element electrically connected to

said conductive pattern, a large signal type semiconductor element electrically connected to said conductive pattern, a small diameter fine metal wire for bonding said conductive patterns, and a large diameter fine metal wire for bonding said large signal type semiconductor element with said conductive pattern, wherein:

5 a semiconductor device is mounted on said mounting board, said semiconductor device having a plurality of conductive paths electrically separated by a trench, a large signal type semiconductor element fixed on said conductive path, a large diameter fine metal wire connecting said large signal type semiconductor element with said conductive path, and an insulating resin for coating said large signal type semiconductor element and the large diameter fine metal wire and being filled in said trench between said conductive paths to serve as the integral support, with a back face of said conductive paths exposed, wherein connecting means other than said large diameter fine metal wire is used in an area except where said large signal type semiconductor device is mounted.

15 15. A hybrid integrated circuit device at least comprising a mounting board having at least an insulated surface and with a plurality of conductive patterns, a small signal type semiconductor element electrically connected to said conductive pattern, a large signal type semiconductor element electrically connected to said conductive pattern, a small diameter fine metal wire for bonding said small signal type semiconductor element with said conductive pattern, and a large diameter fine metal wire for bonding said large signal type semiconductor element with said conductive pattern, characterized in that:

20 a semiconductor device is mounted on said mounting board, said semiconductor device having a plurality of conductive paths electrically separated by a trench, a semiconductor element fixed on said conductive path, a fine metal wire connecting said small signal type semiconductor element with

said conductive path, and an insulating resin for coating said small signal type semiconductor element and the fine metal wire and being filled in said trench between said conductive paths to serve as the integral support, with a back face of said conductive paths exposed, wherein said small diameter fine metal wire and said large diameter fine metal wire are used within said semiconductor device, and said fine metal wire is not used in an area except where said semiconductor device is mounted.

16. The hybrid integrated circuit device according to any one of claims 11 to 15, wherein the side face of said conductive paths has a curved structure.

17. The hybrid integrated circuit device according to any one of claims 11 to 16, characterized in that a conductive film is provided on said conductive paths.

18. The hybrid integrated circuit device according to any one of claims 1 to 3, 5, 6 or 9 to 17, wherein an active element and/or a passive element, besides said semiconductor element, are contained and electrically connected to said conductive path, and a circuit is formed including said active element and/or said passive element.

19. The hybrid integrated circuit device according to any one of claims 11 to 19, wherein said conductive paths are composed of Cu, Al, Fe-Ni alloy, Cu-Al laminate, Al-Cu-Al laminate, or Cu-Al-Cu laminate.

20. The hybrid integrated circuit device according to claim 17, wherein said conductive film is composed of Ni, Au, Ag or Pd.